Ohio Agricultural Experiment Station

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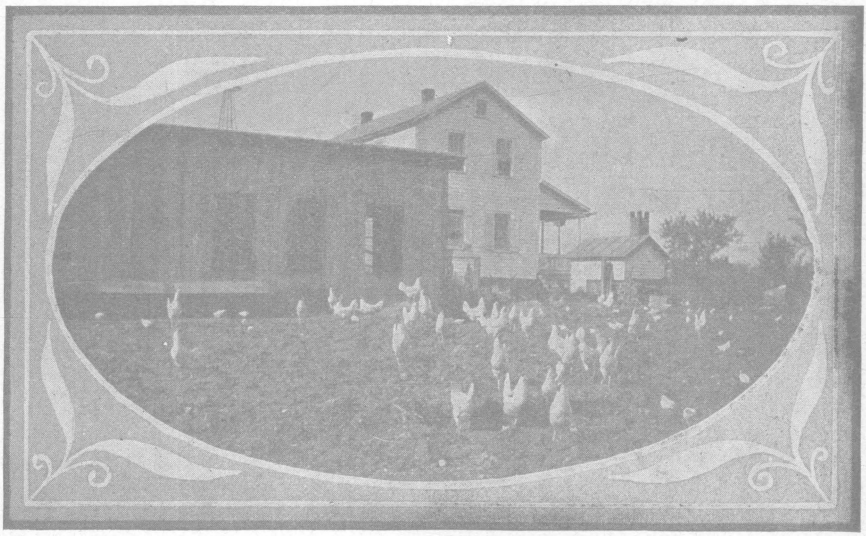
WOOSTER, OHIO, OCTOBER 9, 1911

FARM POULTRY

A COOPERATIVE INVESTIGATION OF THE PROFITABLENESS OF POULTRY WHEN KEPT UNDER FARM CONDITIONS



CHAS. E. THORNE, *Director, Ohio Agricultural Experiment Station.*

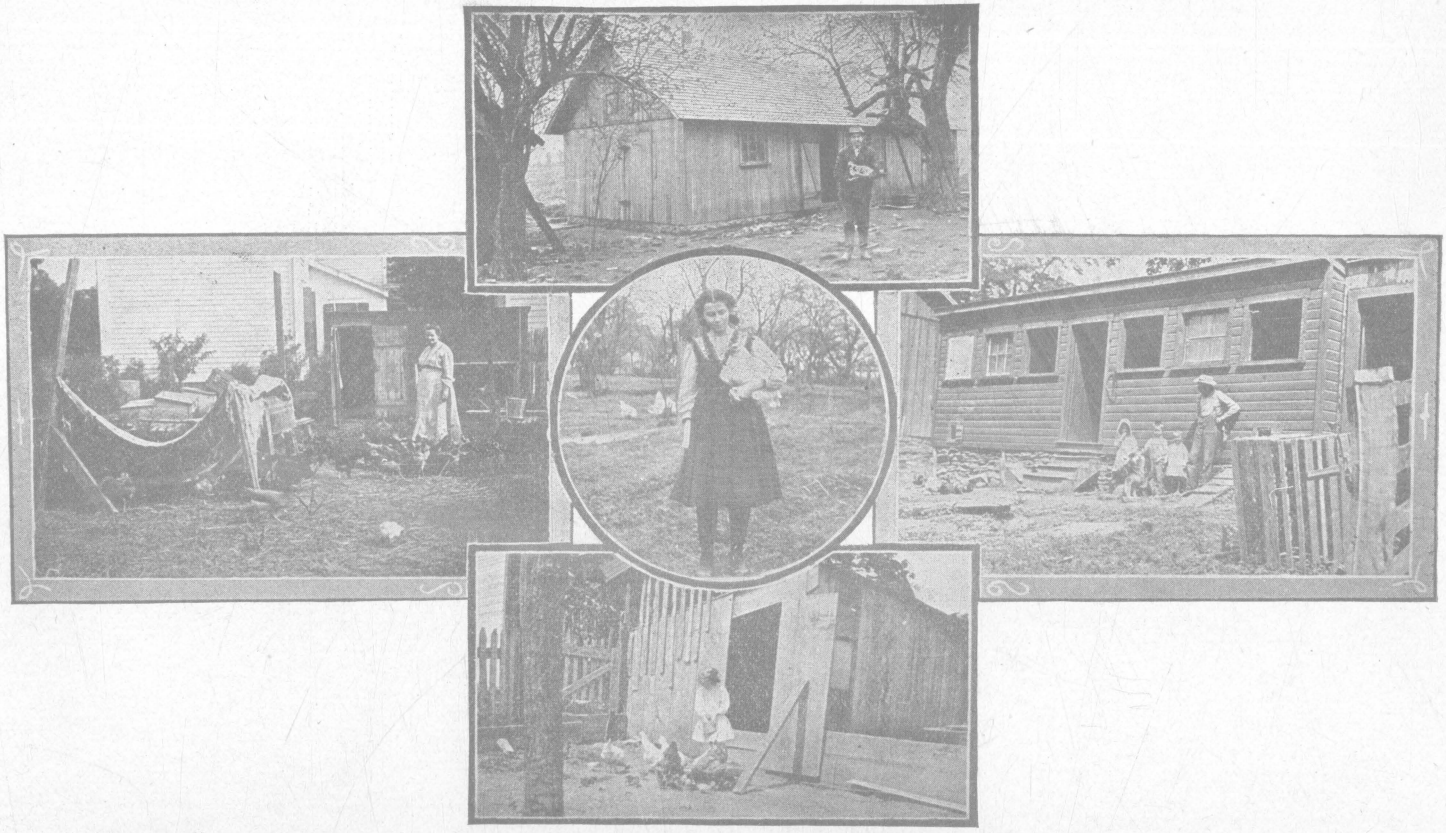
SIR: I have the honor to transmit herewith and to recommend for publication as a circular by the Experiment Station the accompanying manuscript entitled "Farm Poultry" which has been prepared by Mr. W. A. Lloyd and Mr. W. L. Elser, both of this Department.

Much difference of opinion seems to exist regarding the cost of production of poultry products on the farm. This paper is a preliminary report of a cooperative farm management investigation which it is hoped will shed light upon this subject.

Respectfully submitted,

L. H. GODDARD, *Chief, Department of Cooperation.*

Approved: CHAS. E. THORNE, *Director.*



THERE IS A DIFFERENCE

A PROFITABLE FLOCK

FLOCK No. 20

Number of fowls, 96

Inventory February 2, 1910		Inventory February 2, 1911	
Value of flock	$ 48.00	Value of flock	$ 55.00
Value of equipment	50.00	Value of equipment	45.00
	$ 98.00		$100.00
Feed used	$ 50.58	Eggs sold	$234.43
Labor	34.95	Eggs used	10.37
Supplies	1.75	Poultry sold	53.45
Amount to balance (profit)	237.37	Poultry used	14.40
		Manure	10.00
	$422.65		$422.65

AN UNPROFITABLE FLOCK

FLOCK No. 16

Number of fowls, 82

Inventory November, 1, 1909		Inventory October 31, 1910	
Value of flock	$ 50.00	Value of flock	$ 45.00
Value of equipment	42.30	Value of equipment	84.70
	$ 92.30		$129.70
Feed used	65.46	Eggs sold	45.51
Labor	49.98	Eggs used	10.44
Supplies	50.45	Poultry sold	25.29
		Poultry used	8.85
		Manure	8.75
		Amount to balance (loss)	29.65
	$258.19		$258.19

THE PARALLEL

FLOCK No. 20		FLOCK No. 16	
Number of fowls, 96		Number of fowls, 82	
Feed cost per fowl	$ .526	Feed cost per fowl	$ .798
Labor cost per fowl	.364	Labor cost per fowl	.609
Feed and labor cost per fowl	$ .89	Feed and labor cost per fowl	$ 1.407
Eggs produced	11,514	Eggs produced	3,579
Eggs per hen	128	Eggs per hen	43
Average price per dozen	27.7c	Average price per dozen	23c
Value eggs sold	$ 234.43	Value eggs sold	$ 45.51
Value poultry sold	53.45	Value poultry sold	25.29
Total profit per fowl	2.47	*Total loss per fowl*	.36

THERE IS A REASON

FARM POULTRY

A COOPERATIVE INVESTIGATION ON THE PROFITABLENESS OF POULTRY WHEN KEPT UNDER FARM CONDITIONS

By W. A LLOYD AND W. L. ELSER

This investigation was begun in August, 1909, by the Department of Cooperation of the Experiment Station, with one cooperator. By the following February this number had increased to eighty-six, who were located in thirty-six counties of the State and represented widely varying phases of the poultry industry. The city-lot poultryman who kept his fowls penned throughout the year and who bought all his feed, the suburban resident with limited range, the farmer with unlimited range, and the commercial poultryman, were all represented. No strictly fancy poultrymen were included, though in a few cases a small number of fowls were sold for breeders and a few settings of eggs for hatching at more than market price.

OBJECT OF THE INVESTIGATION

Commercial concerns engaged in the manufacture of poultry appliances have written into their catalogs glowing accounts of the poultry business, and abstract statisticians have figured extraordinary profits. Certain "systems" have given wide publicity to the enormous returns that have been secured on a city lot. Other "systems" eliminate the necessity of the lot without decreasing the profit. The city man, influenced by abstract figuring of grossly exaggerated returns, looks upon the poultry business as a sure road to wealth and feels that the price he pays for poultry and eggs is little short of robbery, while the farmer frequently, if not usually, considers the flock as unprofitable. To use his own language, "they eat their heads off." Somewhere between the point of view assumed by the producer and felt by the consumer lies the truth. To ascertain this has been the object of this investigation.

No advice has been given to cooperators at any time as to methods of management relative to the housing, feeding or care of the flock; the object of the investigation being to study conditions as they exist, not to teach what they ought to be. Indeed, it is doubtful if very much in the way of advice is necessary to a person giving careful attention to the purely business end of an enterprise. He can hardly study *how* the enterprise is yielding for any very great length of time without discovering *why* it is yielding satisfactorily or otherwise.

Ohio Agricultural Experiment Station

DEPARTMENT OF COOPERATIVE EXPERIMENTS

FARM MANAGEMENT INVESTIGATIONS: POULTRY

In cooperation with

Name..... P. O. .....

INVENTORY

Date..... Taken by.....

Equipment	No.	No. 1, 19 Cost	No. 1, 19 Value	No.	No. 2, 19 Cost	No. 2, 19 Value
House No. 1						
House No. 2						
House No. 3						
Yard						
Fence						
Water Fountain						
Feed Trough						
Self Feeders						
Shell Hoppers						
Nest Boxes						
Trap Nests						
Nest Eggs						
Bone Cutter						
Vegetable Cutter						
Clover Cutter						
Feed Cooker						
Grit Mortor						
Colony Houses						
Coops						
Brooders						
Incubators						
Egg Tester						
Thermometer						
Punch						
Sprayer						
Roup Syringe						
Vaporizing Set						
Killing Knife						
Total Equipment						
Feed						

Stock	No. 1, 19 No.	No. 1, 19 Value	No. 2, 19 No.	No. 2, 19 Value
Chickens				
Hens				
Cocks				
Cockerels				
Pullets				
Turkeys				
Toms				
Hens				
Poults				
Geese				
Ganders				
Goslings				
Ducks				
Drakes				
Ducklings				
Guineas				
Peafowls				
Pheasants				
Pigeons				
Total Stock				
Products	Am't.		Am't.	
Eggs				
Feathers				
Manure				
Total Products				
Supplies	Am't.		Am't.	
Legbands				
Cases				
Crates				
Disinfectant				
Charcoal				
Total Supplies				
Summary				
Equipment				
Feed				
Stock				
Products				
Supplies				
Total Summary				

The above list is intended to be suggestive rather than complete. No one will have all the articles mentioned, while all will probably have some not included. Include everything connected with the poultry. List stock at market value at time of taking the inventory.

Another blank with your Inventory No. 1 copied thereon will be sent you at the close of the year on which to make your Inventory No. 2.

Fig. 1. Inventory sheet

Fig. 2. Monthly Report sheet

PLAN OF THE EXPERIMENT

In conducting the experiment, each flock was inventoried at the beginning and again at the end of the year (see Figure 1) and each cooperator was furnished with a pad of 24 blanks, a reduced illustration of which is shown in Figure 2. Carbon sheets were furnished so that a copy of the report might be retained when the original was sent to the Station at the end of each month. The entries on these blanks in the illustrations are taken from the report of a flock and indicate the character of the information furnished. Each pad of blanks contained two summary blanks (see Figure 3) on which to carry forward the footings from the monthly records. One copy of the summary was sent to the Station at the end of the year, which was checked by the entries on the monthly sheet and a corrected copy was sent to the cooperator.

FEED AND LABOR

Only two requirements of the investigation presented any serious difficulties. Under farm conditions the feed for the poultry is usually taken from the bin or crib as needed; often with little heed as to the exact amount fed per day. Moreover, this is a chore that is frequently done by children or by the women of the household. To get accurate data as to the daily ration would have entailed extra work and often seriously changed the method of handling the flock, which would have destroyed the value of the test. To avoid this difficulty it was suggested that the feed for the poultry be periodically set aside in large quantities and charged against the flock in lump sums. Supplies of shells, grit, etc., were handled in the same way. The approximate ration fed was also given. It was, therefore, easy to check these figures pretty accurately. This method so simplified the feeding operations that very accurate and trustworthy data were secured in most cases. The labor record presented more difficulties. Several members of the family are frequently concerned with the care of the flock. A few minutes many times a day is given to the poultry. To get a near approximation of the amount of labor, each cooperator was asked to keep an exact account of the time consumed by the regular work incident to the poultry management for a period of two weeks, and to take the average of this as the amount of regular daily work. This average was based on the time it would take a man to do the work. If two little girls occupied two hours gathering eggs that could have been gathered by a man in 15 minutes, the latter amount was entered. Any extra work, such as repairing coops, marketing eggs, etc., was charged extra. The rate of man labor was based on the price paid

for common labor in the community of the cooperator. Each of the flocks included in the circular has been visited by the author and it is believed the results are accurate and trustworthy.

THE FLOCKS DESCRIBED

We believe the flocks visited represent a condition rather above than below the average of the community in which they were found. They are by no means the best and may probably be correctly said to present a fair average of those flocks which have received more than a passing interest. With regard to breed, the flocks classify as follows: American class, 16, represented by the following breeds: Rhode Island Reds 5, Barred Rocks 9, White Wyandottes 1, White Rocks 1. Mediterranean class, 9, made up of Brown Leghorns 5, White Leghorns 1, Buff Leghorns 2, and Black Minorcas 1. Asiatic class, 1, White Langshans; and mixed flocks, 4. In only three cases was any particular attention paid to standard requirements. The flocks were pure-bred rather than standard-bred. Nor could the four flocks classified as mixed be properly considered as mongrels.

While this investigation is not particularly concerned with a study of breeds or varieties, so much confusion among farmers exists with regard to the accepted terminology that it is well perhaps to get the distinction clearly in the mind.

(1) **Standard-bred poultry** consists of flocks bred to meet the breed and variety requirements of the American Poultry Association.

(2) **Pure-bred poultry** consists of flocks of distinct varieties without admixture of other blood, but in which no attention is given to the requirements of the standard.

(3) **Cross-bred poultry** consists of the progeny of two distinct varieties.

(4) **Mixed poultry** consists of flocks in which the females are made up of various varieties and crosses, but into which new blood is infused each year by the introduction of males secured from sources other than the home flock.

(5) **Mongrels** or Dunghills are fowls that are allowed to mate indiscriminately year after year, the males being selected from the home flock.

Referring to the above classification, it is probable that more than half of the chickens of the State are mixed; in point of number the other classes ranking as follows: Pure-breds, Standard-breds, Mongrels and Cross-breds, a very insignificant part of the poultry being in the last two classes.

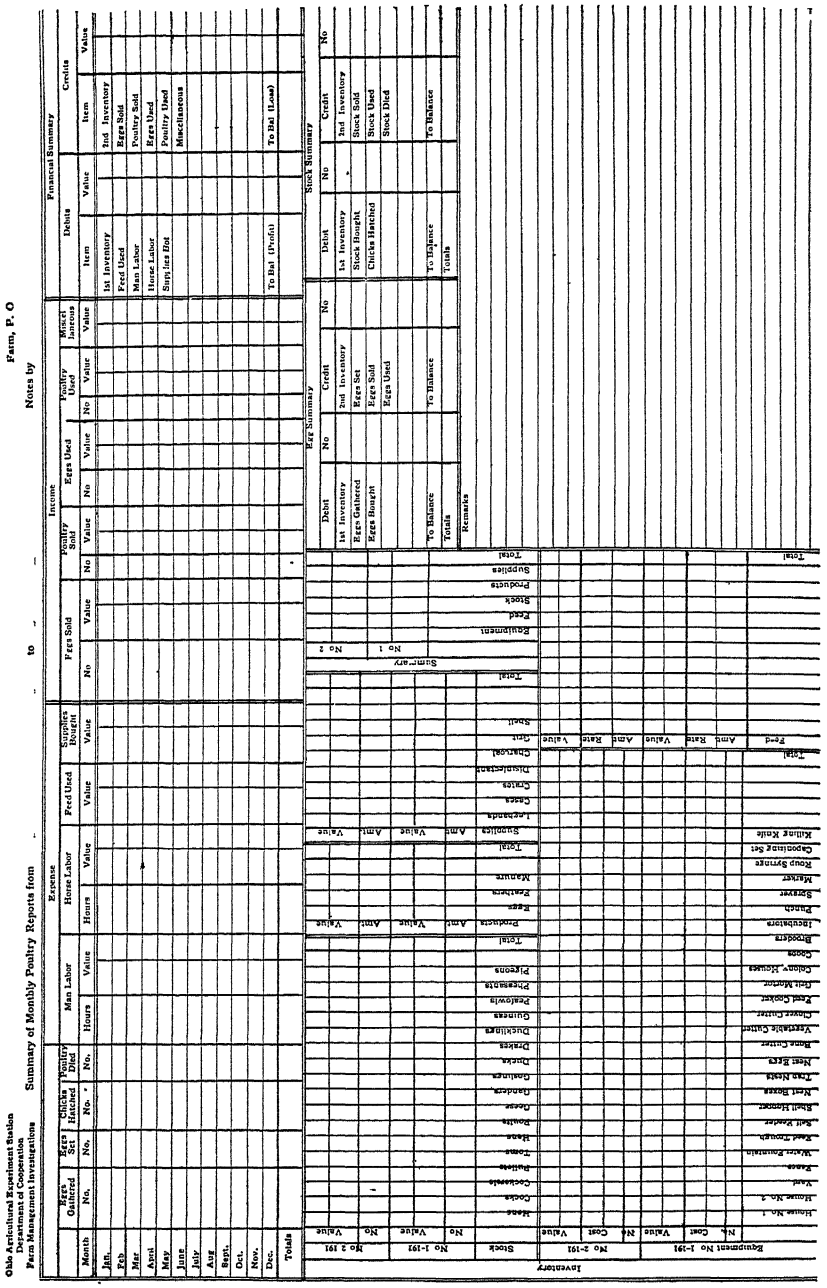


Fig. 3 Yearly Summary sheet

The behavior of the different breeds as to egg production seems to be more a matter of care and feed than of breed. Of course, the individuality of the fowls enters quite largely into the matter, as the trap nest has repeatedly shown. As a general rule it may be said that the smaller, more active breeds are more prolific layers than the heavy breeds, while the intermediate breeds may be styled general purpose chickens, combining to some extent the laying tendencies of the lighter with the meat production of the heavier breeds.

In observing hundreds of flocks in all parts of the State, it may be said that as a general rule the Standard-bred and Pure-bred chickens are given much better care than the flocks of mixed fowls. The pride which the farmer has in a uniform flock whose breed type is to his particular fancy is accountable for this, and this better care is usually the key to the better performance. A uniform flock of poultry is a farm asset. It adds to the attractiveness of the home and to the value of the farm.

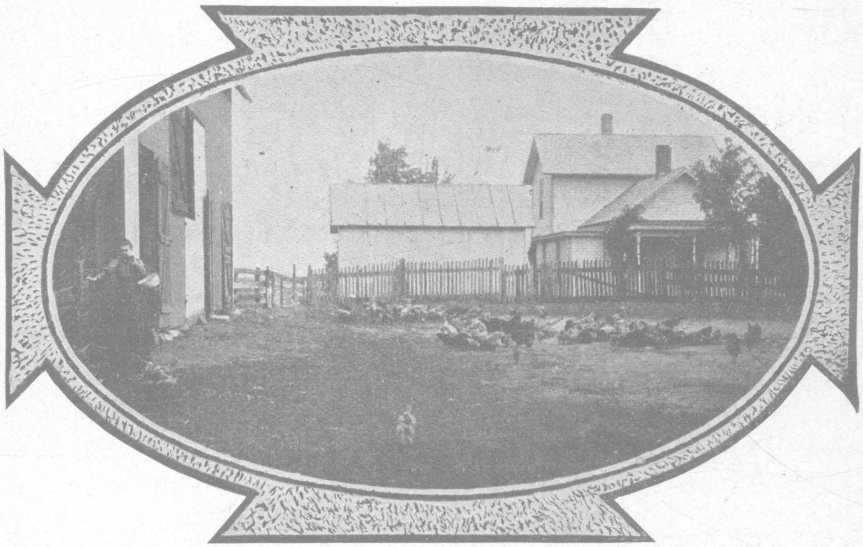


Fig. 4. A typical farm flock

THE RESULTS ANALYZED

Referring to the table on page 68, where flock No. 20 yields a net profit above feed and labor of $237.37 or $2.47 per fowl, in comparison with flock No. 16, which nets a loss of $29.65 or 36c per fowl, a number of interesting phases of the poultry enterprise present themselves. The flocks were approximately the same size. Both

were pure-breds. There was no appreciable loss from disease in either flock; but the situations surrounding the flocks were entirely different. Flock No. 20 was situated in a purely rural community and had complete farm range. Flock No. 16 was in the suburbs of a small town and was kept in pens throughout the year. The feed cost per fowl is less in flock No. 20 by .272c than in flock No. 16, but this feed cost does not include kitchen, garden and orchard waste, farm gleanings, pasture, bugs, insects, worms, etc., which constituted a very considerable portion of the feed consumed by the fowls of flock No. 20, and of which flock No. 16 had but very little. The market price for eggs averaged 4.7c per dozen higher from flock No. 20 than from flock No. 16, occasioned by the product from flock No. 20 being sold to a private trade. The labor cost of flock No. 20 is less by .245c per fowl, occasioned by the different systems of management; but these variations do not make up for the wide difference that exists between the profit of $2.47 per fowl and a loss of 36c per fowl. Where the difference is most striking is in the number of eggs per hen. An average of 128 eggs per hen from a flock of the size of flock No. 20 is certainly a very gratifying return, while 43 eggs, which is all that was secured from flock No 16, is decidedly unsatisfactory.

The individuality of the hens in flock No. 20 undoubtedly had something to do with the results, though no trapnesting had ever been done. It is quite possible, however, that if the two caretakers could have exchanged flocks, results would not have been greatly different. The system used by the manager of flock No. 16 was undoubtedly at fault, at least under his circumstances. However much an analysis of the figures may indicate, they can never tell the whole truth. To ascertain this we must look deeper. The low feed cost of flock No. 20 has been investigated and explained above, but it is in following the cue given us in the low labor cost that we strike pay dirt. This labor cost does not include the time spent "looking at" and "petting" the chickens by the flock mistress of flock No. 20. No more truly can it be said that "the eye of the master fattens the cattle" than that the coddling by the mistress helps fill the egg basket. It is not necessarily inferred that successful poultry husbandry is essentially a woman's business; but it is peculiarly true that success with poultry is intimately dependent upon close attention to a very large number of details; the doing of a large number of little things at the right time; and that the management of a poultry "system" requiring an excessive amount of care is not the part of a man with a number of other interests at stake.

The manager of flock No. 16, through the keeping of the records, has discovered his mistake and so changed the management of his

flock, that with a greatly reduced number of hens he is now gathering many more eggs than from the larger flock. Indeed, the egg yield per hen has more than doubled, and this year's work promises to yield him a very handsome profit.

TABLE 2. RESULTS FROM 18 FLOCKS KEPT ON FARMS

Flock No.	No. fowls	Eggs per hen	Value of equipment	Lab'r cost per fowl	Feed cost per fowl	Value eggs sold	Value poultry sold	Total cash receipts	Eggs used		Poultry used		Profit per fowl
									No.	Value	No.	Value	
1	110	72.4	$ 25.22	39 c	60.7c	$ 98.89	$ 46.93	$145.82	684	$12.80	17	$12.47	$ .70
2	115	86	101.75	23	55.5	112.78	21.77	134.55	1,501	25.01	18	9.20	.658
3	47	66	32.65	36	49	37 49	34.52	72.01	613	10.26	13	12 40	1 07
5	49	157	20.70	58	53.6	120.57	7.45	128 02	1,014	19.89	9	5.10	1.53
6	80	59.8	57.45	46	65	93.00	58.05	151.05	443	9 10	7	2.65	.83
10	83	76	187.75	37	78.3	66.70	47.50	114 20	1,632	31.79	45	29.75	.93
11	116	75	50.15	20	96	133.72	37.24	170.96	877	20.22	14	9 30	.63
12	309	81	159 00	24	58	217.39	105 22	322.61	2,511	41.35	86	31.10	.686
13	116	95.2	66.00	37	69.3	127.59	51 03	184.62	388	6.62	20	7.47	.673
15	93	78.8	31.70	15	35	80.09	19.18	99 27	1,374	21.66	10	4.55	1.54
17	95	91.3	25 00	33	58	88.73	20.82	109.55	956	20 25	25	21.35	.88
18	149	79	156 50	32	51	92.77	90.33	183 10	1,336	21.62	27	13.72	.145
20	96	128	50 00	36.4	52.6	234.43	53.45	287.88	535	10.37	30	14.40	2.47
21	118	72	64.65	31	48	105.37	40.63	146 00	809	13.34	27	9.73	623
22	46	60.4	20.00	23	55	50.89	20.37	71 26	806	12.70	28	8 30	1.04
25	150	71	75.00	24	55	159.47	14.65	174.12	1,713	26.61	106	39.60	.69
30	370	85	31.95	24	70	341.44	125.79	467.23	1,272	21.32	8	5.25	.753
31	38	66	25.60	40	56.2	19.13	26.84	45.97	552	8.60	14	11.44	.682
Av.	121	71	65.61	28	61	121.14	45 67	166.81	1,056	18.41	28	13.76	.87

TABLE 3. RESULTS FROM 12 TOWN FLOCKS AND 1 COMMERCIAL POULTRYMAN. FOWLS KEPT WHOLLY OR PARTIALLY CONFINED

Flock No	No. fowls	Eggs per hen	Value of equipment	Lab'r cost per fowl	Feed cost per fowl	Value eggs sold	Value poultry sold	Total cash receipts	Eggs used		Poultry used		Profit or loss(-) per fowl
									No.	Value	No.	Value	
*4	333	141	$401.50	.32	.81	$733.86	$ 77.57	$811.43	722	$14.15	29	$ 8.35	$1.46
7	87	126	58.00	.67	1.60	103.48	24.09	127.57	893	16 31	14	4.91	.56
8	24	145	65.70	.71	.84	22 05	1.50	23.55	592	12.10	19	13.53	1.10
9	30	53	171.45	1 60	1.27	4.77	9.25	14.02	965	19.32	39	20.87	—.93
14	26	128	14.50	1.57	1.45	24.29	89.20	113.49	1,004	19.50	14	8.95	1.64
16	82	43	42.30	.609	.798	45.51	25.29	70.80	612	10 44	20	8.85	—.36
19	97	103	74.43	.62	1.32	49.36	47.57	96 93	1,793	26.27	72	30.15	—.37
23	28	88	448.35	1.96	2 40	56.54	110.75	167.32	526	9.18	9	4.83	1.21
24	18	64	24.56	.34	.63	16.19	4.90	21.09	106	1 62	..	.....	.09
26	60	94	36.14	.36	.74	141.54	23.16	164.70	650	10.91	20	4.00	1.29
27	48	90	16.35	.35	.83	24.54	13.66	38.00	1,392	24.54	..	.....	.76
28	25	84	6.45	.66	1.17	2.50	1.00	3 50	1,872	39.91	24	13.25	.90
29	35	49	104.25	.52	.78	5.65	1.00	6.65	586	11.16	21	10.05	—.48
Av.	46	70	88.54	.60	.97	41.36	29.28	70.63	916	16 77	21	9.95	.36

*Commercial poultryman: not included in these averages.

Comparing these results with the whole number of flocks considered, we find:

18 farm flocks, average number of eggs per hen 71
12 town flocks, average number of eggs per hen..... 70
1 commercial poultryman,.....141
Average for all flocks,..... ..... 76.5

SIZE OF FLOCK AND ITS RELATION TO PROFIT

Averaging the results from 31 completed records we find the average number of fowls per flock to be 99. Of these, 18 were farm flocks and 13 city-lot and suburban home flocks. The average size of the farm flock was 121 fowls, while the average of the town flock, excluding one purely commercial poultryman, was 46 fowls. Taking the average flock as the basis we find that we have the following profits per fowl:

Average profit per fowl in town flocks of more than 46	$ .26
Average profit per fowl in town flocks of less than 46	.44
Average of all flocks kept in town (i. e. wholly or partially confined)	.32
Average profit per fowl in farm flocks of more than 121	.63
Average profit per fowl in farm flocks of less than 121	.98
Average profit in farm flocks (i. e. complete range)	.83
Average profit for all flocks	.84

The largest number of fowls kept in any town flock was 97 and the fewest 18. Four of the town flocks showed a loss. The greatest loss from a town flock was from flock No. 9, averaging a net loss of 93c per fowl. The greatest profit from a town flock was from flock No. 14, consisting of 26 fowls, averaging a net profit above feed and labor of $1.64 per fowl.

None of the farm flocks showed a loss. The greatest profit was from flock No. 20 of 96 fowls, $2.47 per fowl (see flock No. 20 on page 68). The least profit was from flock No. 18, of 149 fowls, 14.5c per fowl.

Three of the flocks exceeded 300 fowls, from which the average profit was 86c.

FEED COST

The average feed cost per fowl for the 13 town flocks was $.97. Subdividing these into two classes, one of which had limited range and one of which had no range, we have:

8 flocks, no range, feed cost	$.99
5 flocks, limited range, feed cost	.87
Difference	$.12

Query: Does the difference represent the value of range (pasture) to a chicken?

Comparing again with the farm flocks, we have:

13 town flocks, feed cost per fowl	$.97
18 farm flocks, feed cost per fowl	.61
Difference	$.36

The farm flocks have a feed cost of 84 percent of the average in comparison with 134 percent for the town flocks. The great difference in favor of the farm flocks is attributable to a number of causes.

(1) Gleanings: (a) After the grain is cut the flocks gather large quantities of shattered grain from the ground that would otherwise be absolutely lost; (b) before harvest the flocks often "waste" a considerable amount of grain, also to some extent from the shocks and ricks when the fields are close to the farmstead. This is frequently a source of great aggravation to the farmer, and a principal reason for his considering poultry a "nuisance." It has cost labor and money to produce the crop and the quantity wasted, could it be determined, should be charged against the flock. However, is it "wasted"? When a field of rye or corn is hogged off it is not considered "wasted." The part eaten by the poultry, if it can be determined, should be charged against the flock, less the cost of harvesting, threshing and storing. Indeed, some poultrymen are sowing small fields or "patches" of grain close to the poultry yard and allowing the poultry to harvest it, considering it to be good poultry management to allow the fowls to get their feed in this manner. (c) Gleanings from the orchard and garden furnish another important food supply and largely one of pure credit to the flock, inasmuch as it saves what would otherwise be an absolute waste. A small amount of marketable fruit is damaged, and at times the fowls do some premature "gleaning" in the lettuce beds or flower garden which furnishes a juster source of aggravation than the gleanings from the ripening grain. The discriminating housewife, however, usually places the blame on the need of repairs to, or the total absence of, the garden fence. (d) The rejected cabbages, beets and other vegetables from the garden, if properly stored, constitute an excellent source of green food for use during the winter months. (e) The offal at butchering time constitutes a food supply that on many farms marks the time when the hens begin to lay. It probably calls attention to an illy-heeded admonition that an insufficient amount of animal food is being provided.

(2) Pasture: The pasture has been alluded to in a previous paragraph. Grass is a natural and very important part of a poultry ration. Any other form of green food is a substitute for it. The grass consumed by the poultry constitutes a just but as yet undetermined charge against the farm flock. The amount before suggested, 12c per hen per year, may be too high or it may not be high enough. It is suggested only as an indication and as a subject of future study.

(3) Weed seeds and insects: This constitutes a direct overhead credit of undetermined value. The countless thousands of insects, worms and weed seeds destroyed by the fowls during the summer help to restore the balance man has destroyed

by the slaughter of the wild birds; and they are also an important food supply. One farmer reports that the chickens by following the plow in the furrow and catching the grubs and cutworms saved his corn crop.

(4) **Dairy by-product:** Skim milk, separator milk and curds are largely used in the country as poultry foods. They afford a splendid addition to the ration and one much relished by the poultry. This by-product of the dairy has a money value and should be charged against the flock. However, it is a cheap source of food not usually available to the city poultryman.

(5) **Difference in actual cost of grain consumed:** The feed that has been produced on the farm and is consumed by the poultry is charged against the flock at the current price paid at the elevator or feed store or mill, less the cost of marketing, while the town poultryman usually buys in small quantities from the local merchant at a very greatly increased price.

LABOR COST

The difference in labor cost between the town and the farm flocks is also significant, largely from the enforced difference in management. Comparing the different situations we find:

18 farm flocks. labor cost per fowl	$.28
12 town flocks, labor cost per fowl	.60
1 commercial poultryman	.32
Average of all flocks	.37

The above difference is largely due to the disadvantage of the flocks kept wholly or partly confined. It may often happen, however, that the labor incident to the care of the town flocks has its recompense in a little work in the open, a better circulation, a better digestion and a more wholesome outlook, and withal, in the pleasure of having for the table a clean, wholesome product that is the work of one's own hands. Such a consummation may easily make up for any lessening of profits or even for a loss.

INCOME

The two important sources of income from poultry are from the sale of eggs and from the sale of poultry. From the 31 flocks considered the results are as follows:

Income from 31 flocks	Average per flock		
	Sale of eggs	Sale of poultry	Total
18 farm flocks	$121.14	$45.67	$166.81
12 town flocks	41.36	29.28	70.64
1 commercial poultryman	733.86	77.57	811.43
Average of all flocks	110.03	40.34	150.37

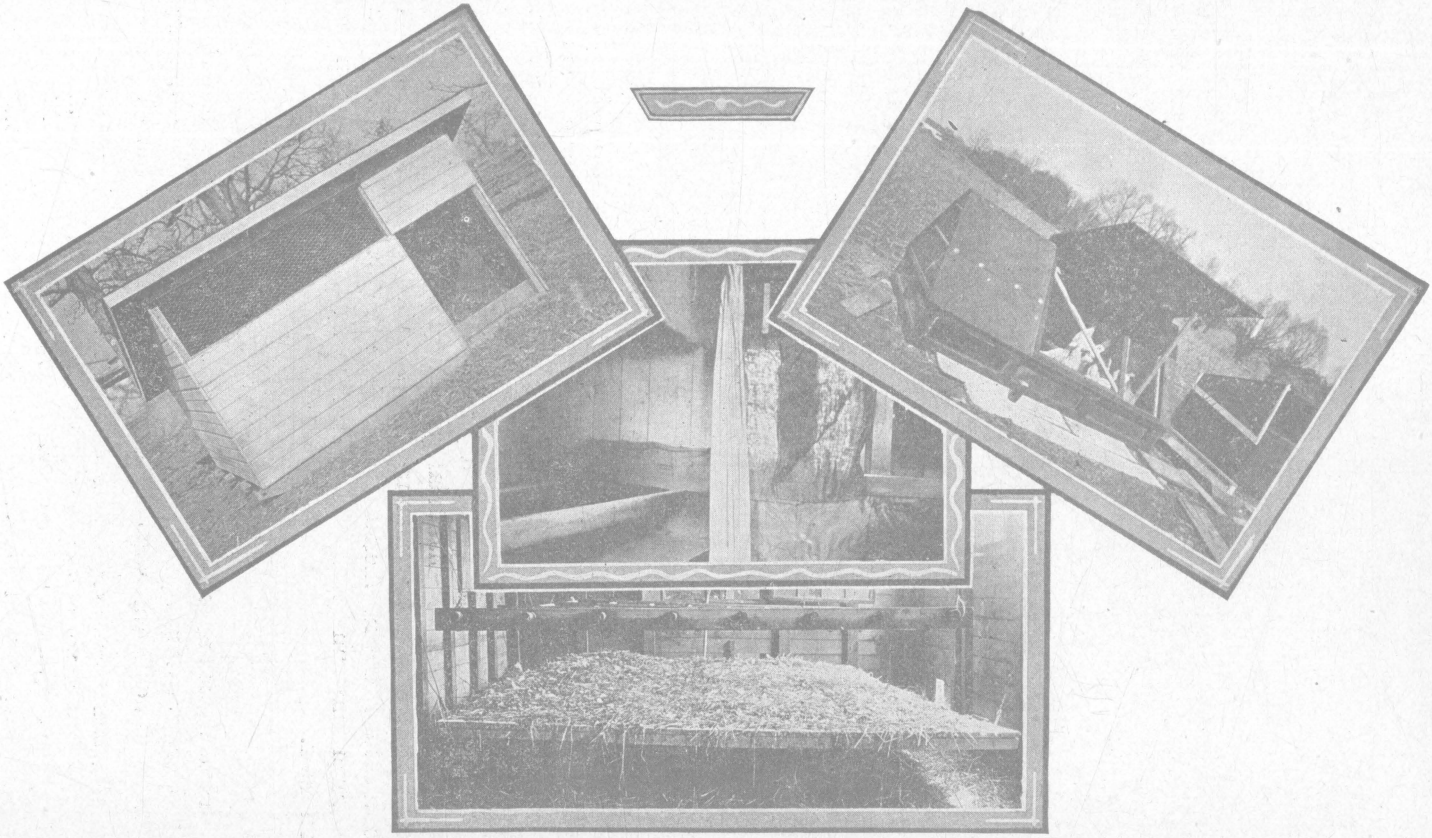


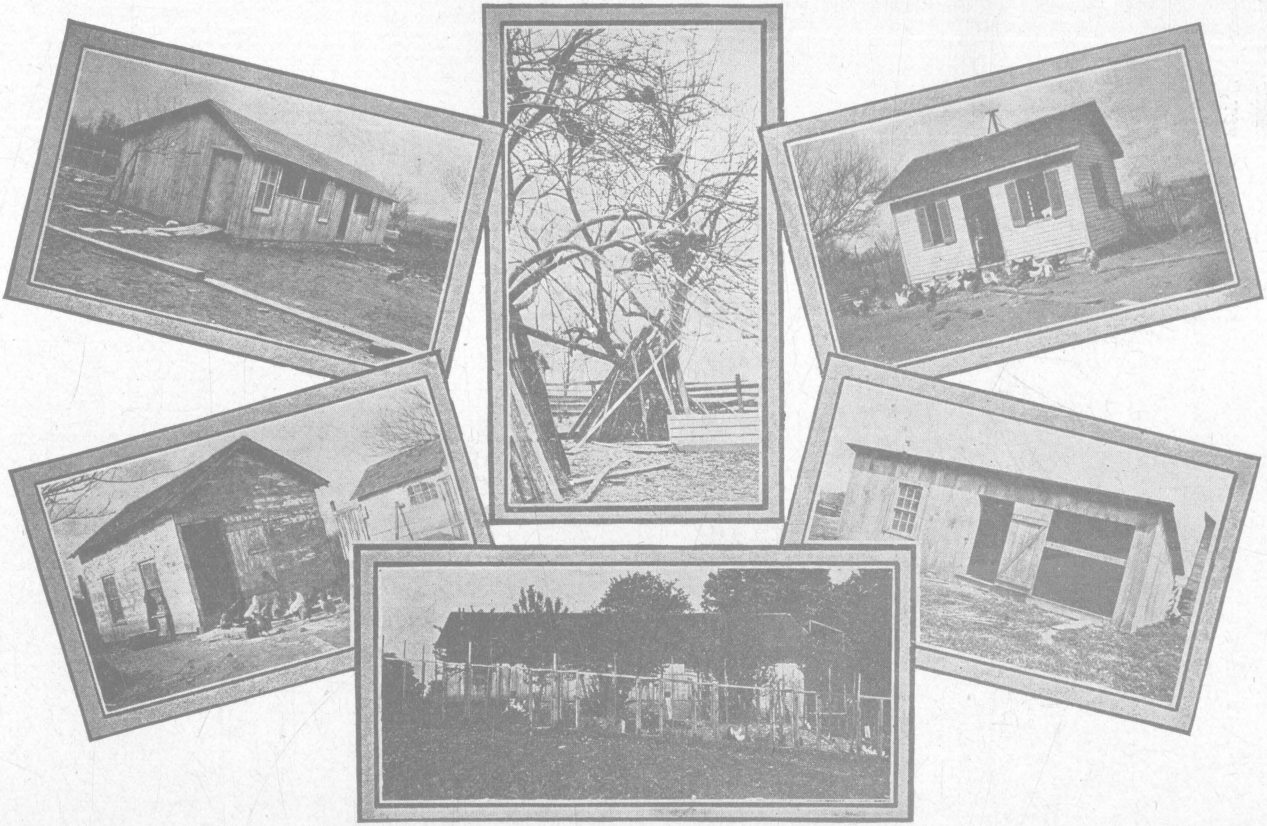
Fig. 5. Some poultry conveniences

Eggs are by far the most important source of income, being 73 percent of the total. Other minor sources of income are: (1) **Feathers.** There is a good demand for properly cared for chicken feathers, though the amount secured under usual farm practice is necessarily very small. They are not usually saved. (2) **Manure.** Poultry manure is a highly variable product; its fertilizing value being dependent upon both the kind of feed consumed by the fowls and the method of caring for the product. If the flock is fed liberally of meat scraps, cut bone and other nitrogenous feeds, the droppings will contain a much higher percent of nitrogen than if grain feeds only are used. It is a very common practice to distribute air-slacked lime liberally in the poultry house under the roosts. This practice is commendable from a sanitary standpoint, but the value of the manure is decreased by the consequent lowering of the nitrogen content. Gypsum, floats or acid phosphate are good substitutes for the air-slacked lime. Analyses of poultry manure differ greatly. Professor Storer in his "Agriculture in some of its relations with chemistry," gives this conservative analysis: water 56 percent, nitrogen 1.6 percent, phosphoric acid 1.5 percent, potash 0.8 percent. At present prices of the chemical ingredients this would warrant a valuation of $5.22 per ton. The New Hampshire Station, in its Annual Report of 1908, reports that the roost droppings from 25 hens for the 6 winter months amounted to 375 pounds. On this basis each hen produces 30 pounds of manure annually and 100 hens should be credited with an amount equivalent to 250 pounds sulphate of ammonia, 300 pounds phosphoric acid and 200 lbs. kainit, if the manure were all saved and properly cared for. Under prevailing systems of poultry management much of the value of the roost droppings is lost, while a large percent of the range droppings is of little manurial value from being deposited where not needed. Poultry manure is an ideal dressing for grass. Not a little of the excellence of herbage in the orchards, when fowls are given the run of it, is to be attributed to the manure from the farm flock.

EQUIPMENT

In the 31 flocks considered the equipment value varies from $6.45 to $448.35, the average for all the flocks being $89.11. The average of the town flocks was somewhat in excess of the farm flocks.

18 farm flocks, average value of equipment	$ 65.61
12 town flocks, average value of equipment	88.54
1 commercial poultryman, value of equipment	401.50
Average of all flocks	$ 85.32



On the basis of number of fowls kept the average value of equipment per fowl was 86c, the town value being $1.63 and the farm value 54c. A great improvement is noticeable in the character of poultry equipment over that of a few years ago. However, the old apple tree at the corner of the barn is still occasionally utilized.

MARKETING

The eggs and fowls of the flocks considered were marketed in various ways, some selling direct to private customers during all or a part of the year, some selling to the local store for cash or trade, some to hucksters at the door and some shipping to the city market.

Ordinarily, eggs or poultry from the farm flocks are marketed at the country store for trade or for cash, or during the summer months are disposed of to the huckster in exchange for his wares at the door. Those living in or near town sometimes sell to a select family trade at an advance of four to five cents above the market or store price. This practice is not nearly so common as it should be.

The difference in the retail buying and selling price in most small towns varies from two to five cents per dozen, the surplus eggs going to the local egg merchant or commission man or to storage, frequently at lower prices than were paid for them to the producer. This arises from the fact that the general merchants handle country produce (butter and eggs) for the business it brings to their stores, making their profit on the goods sold. There is frequently a trade price at from one to two cents per dozen of eggs above what is paid in cash, while in some localities of the state cash is not paid at all, but due-bills or "script," as it is termed, is given for what is not traded out at the time; the eggs in this case passing for money. These various ways of disposing of the product account for the wide variation in the price received for eggs, as shown by the table below. This table shows the average of all the flocks considered for each month from December 1909 to January 1911.

An examination of the table discloses that for all the flocks considered for the period covered by the investigation, the farmer received for his eggs within one-tenth of a cent per dozen of the average Cleveland wholesale price for "current receipts." Manifestly, the country merchant must have looked elsewhere for his profits than to the egg trade. Indeed, in some months the average farm price was in excess of the wholesale Cleveland price, notably in December of 1909: average farm price, 33.8c. Cleveland wholesale price for "current receipts," 32c. The same condition existed in May, June, July, August and December, 1910. The average Cleveland retail price for eggs exceeded the farm price by 4.3c, and the fancy price exceeded it by 9.6c. The lowest Cleveland retail price

was 23c during the month of July and the highest Cleveland retail price was 55c during the month of January, 1910. The lowest farm price was 15c during March, 1910, and the highest farm price was 43.5c during December, 1910. These figures are influenced slightly by the few who sold to private parties. Excluding these and taking the average of those who sold to the store, we find the average retail price to be 24.7c, which is only 1.3c less than the average Cleveland wholesale price for "current receipts."

Period covered by investigation	Cleveland price Retail Cts. per doz.		Cleveland price Wholesale Cts. per doz.		Farm price Cts. per doz.			Average Ohio price 1910* Cts. per doz.
	Fancy	Fresh	Current Receipts	Storage	Maximum	Minimum	Av.	
December, 1909	45	35	32	....	35	31	33.8	30
January, 1910	48.3	36	34.1	25.1	37.5	28.5	31.7	31
February	37.3	32	28	24.5	40	21	27.5	31
March	36.7	29.2	23.1	....	33	15.5	22.3	24
April	28.5	26	21	....	23	18	19.7	19
May	27	24	20	....	25.5	17.5	20.3	19
June	27	24	19.5	....	26	17	20.4	19
July	26.7	23.7	18.7	....	25	16	19.4	19
August	27	24	19.6	....	25	17	22	19
September	29.7	26.5	22.5	....	33	18	22.4	20
October	34	30	25.6	....	32	20	25.2	23
November	38.3	34	30	....	40	20	30.1	26
December	48	40	35.8	24.5	43.5	32	36.6	31
January, 1911	44	39	35	25	39	20	32.5	....
Mean for period	35.5	30.2	26	24.7	....	....	25.9	....
Mean for 1910	34	29	24.8	....	....	....	24.8	23.4

*Year Book 1910, U. S. D. A.

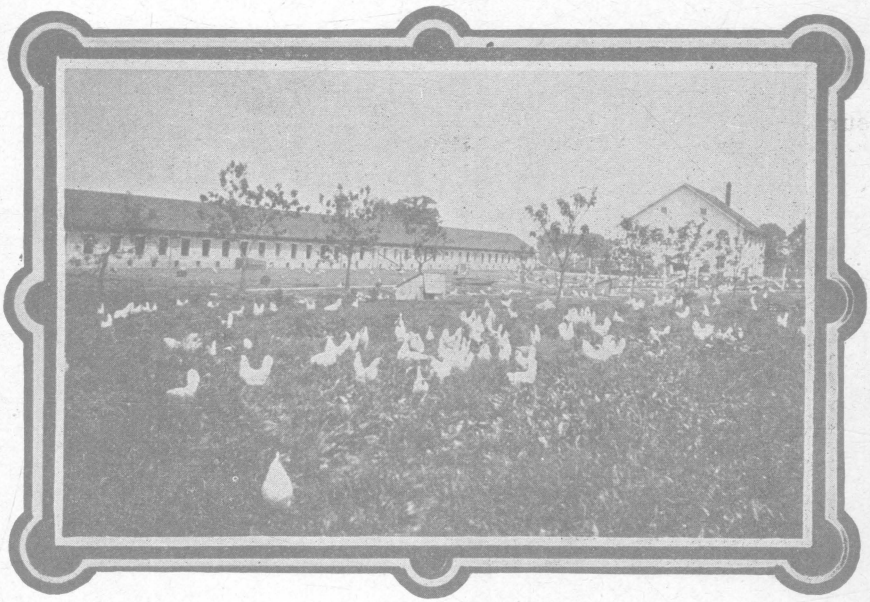


Fig. 7. Commercial poultry plant

THE EGG TRADE

After the eggs leave the producer they travel a long and very devious way before they reach the consumer. The country merchant buys eggs from the producer without regard to kind, color or condition, excluding only checks; i. e., eggs that are broken in bringing to market. He usually sells the eggs which he buys in the same way; i. e., "case count" to the produce man or shipper who usually "candles" the eggs; i. e., grades them in a dark room before an egg candle, into firsts, seconds, dirties, checks, rottens, etc. He in turn disposes of these grades in various ways. During the months of heavy production he may send large quantities of his best eggs to storage on his own account, or he may sell them to the storage houses. He may ship to hotel trade or to commission men or to the retail trade. The produce men usually handle eggs from several counties and ship in car lots. The commission men frequently recandle the eggs and grade them to meet the requirements of their particular trade, a not infrequent route from producer to consumer being the general store, produce men, storage house, wholesale house and retailer.

Eggs gathered from the farm are usually marketed once a week or oftener, though they are sometimes held for a longer period for an increase in market price. There is no incentive to take any particular pains in caring for the eggs marketed, as the general store makes no distinction. The general store makes shipments weekly or oftener, according to the supply and market conditions. After reaching the produce men the eggs are handled as rapidly as possible until in storage or in the hands of the retailer. The terms "fresh," "fancy," "No. 1," "storage," etc., of the retail trade are purely trade terms and do not indicate much with regard to the "freshness" of the product. Indeed, only the poorest grade of storage eggs are usually sold as such. This practice is unfair to the producer, to the consumer and to the storage business. It is unfair to the producer inasmuch as it makes use of terms intended to convey the idea that the product is received directly from him, and his product is made to suffer by reason of any delinquency of the counterfeit. It is unfair to the consumer inasmuch as it deceives him as to the quality of the product he is buying, and is unfair to the storage business inasmuch as the public judges the quality of storage eggs only by the poorest eggs of this class.

A better and more rational system of marketing eggs is needed; a system that will place this most wholesome food product in the hands of the consumer with the least possible delay and in the best possible condition. Particularly to be desired is the elimination of

the present practice of handling of eggs by the general stores. Manifestly the general store-keepers cannot buy the eggs offered in any other way than that in which they do. The country merchant is after business for his store and he dare not offend a patron by refusing what is offered, lest competitors secure the offended customer. His method encourages careless, slovenly habits in caring for the eggs by the producer. He encourages holding the eggs until a quantity can be brought to the store at a time and is himself guilty of storing the eggs in damp, foul-smelling cellars, resulting in mouldy, shrunken eggs of low quality.

Through the present method of marketing, the producer not only bears the brunt of his own sins but he bears as well all those that have attached themselves to his product on the long route between him and the ultimate consumer. It might seem that under the present system the producer is faring very well, considering, as this investigation shows, that he is receiving practically as much for his product at his local store as it brings after it passes through three or four hands and is transported to a distant market. But this advantage is more apparent than real. The farmer who trades his eggs at the country store for goods at a trading price in excess of what the merchant can get for these eggs after shipping them to market, should know that the price he is receiving for his product is an artificial one and that the merchant gets the same percent on the goods he sells whether he pays 16c or 22c a dozen for the eggs.

But the most serious objection to the present system of handling eggs is that the price paid for them, being to a great extent a reflex of the demand, is directly influenced by the low quality of the offering. The consumer who gets a poor quality of eggs from his grocer usually buys something else the next time he goes marketing and so lessens the demand and decreases the price. Thus the producer suffers for every nest egg, stale or dirty egg that he takes to market, and he likewise suffers for the mould and odor imparted by the loose methods of the general merchant. He suffers for the careless handling of the transportation company; eggs in cases unprotected from the sun on a railway platform or in hot freight cars, which are little less than huge incubators, deteriorate rapidly. He suffers from the mis-branding of the eggs in the hands of the retailer. He, more than anyone else, is interested in a more simple and more direct method of handling the product.

A system that will secure the eggs from the producer on a candled, i. e., on a graded basis, so that he will receive a first-class price for a first-class product, thereby putting a premium on freshness and cleanliness, would be most helpful. This, coupled with

transportation under carefully guarded shipping conditions and honest handling by the retailers, would result in putting into the hands of the consumer a clean, wholesome, nutritious food product at a price much less than what is now paid for a very indifferent article and at the same time would increase the profits to the producer.

DIRECT MARKETING

When eggs can be delivered by the producer direct to the consumer, it is an ideal way of marketing the product and should be followed more extensively than it is; however, only a comparatively insignificant number can be handled in this way. The suburban and city lot poultryman should certainly stimulate such a trade. Indeed, it is only by so doing that he can successfully compete with the cheaper production under farm conditions.

Marketing through the creamery has much to commend it and has been tried with some success.

COST OF LIVING

This investigation has developed the following deductions relative to cost of living:

	No. of eggs	Value	No. of poultry	Value
12 town families each consume per year.	916	$16.77	21	$ 9.95
18 farm families each consume per year.....	1,056	18.41	28	13.76

The average size of these families in both town and country was four persons, which included all those who ate regularly at the table.

	No. of eggs	Value	No. of poultry	Value
Average per individual, town, per year.....	229	$4.19	5	$2.48
Average per individual, country, per year....	264	4.60	7	3.44

For this particular food product the cost of living was higher in the country than in the towns. This is attributable to the larger amount consumed per individual on the farm. It is also probable that families living in town and keeping a few fowls consume considerably more both of poultry and eggs than families not keeping them.

SUMMARY

1st. Poultry constitutes a very good minor source of farm income. It should be considered, however, that "profit" as considered in this circular is the net returns above cost of feed and labor; that no rent has been charged for the use of the land, nor have any overhead charges been included. Both these factors are undetermined, but must be considered before a clear profit can be counted. Under farm conditions the poultry usually have the run of the farmyard, orchard and nearby fields, as we have seen, much to their advantage. It is a little difficult to say just how much the poultry should pay the farm for this privilege. A pasture charge is certainly just. In this investigation we have allowed this charge to be balanced by the overhead credit that was due the flock for the destruction of insects, worms, weed seeds and gleanings from the grain fields, orchards, garden, etc., that were thus saved and converted into a source of profit. However, before the merchant or manufacturer counts a profit, he deducts an overhead charge sufficient to cover depreciation and insurance and numerous accidental sources of loss. For instance, merchants in towns along the rivers where their stores are subject to inundations by high water, add a "flood charge" to the selling price of their goods sufficient to cover any contemplated loss, figured on past experience. There are a number of such overhead charges incident to the poultry business. One of our cooperators lost his entire flock of young chicks by a destructive hailstorm at a time in the season too late for him to hatch others. Rats did the work of destruction in another flock. Hawks, crows, skunks, weasels, foxes, chicken thieves, roup, cholera, white diarrhea, failure of the eggs to hatch, hens leaving the nest, incubator and brooder trouble, are all factors that directly influence the profit to be derived from the poultry business, and some of which, under farm conditions, are sure to come at some time. Before the enterprise is profitable it must be able to show a clear profit above such incidental losses through a long period of years. To ascertain how much the overhead charges should be will be a part of the future work of this investigation.

2nd. Both in town and country small flocks have given greater profits per fowl than large flocks.

3rd. Flocks with unlimited range have shown better profits than flocks that were partly or wholly confined.

4th. Farm flocks have been more profitable than village or city lot flocks.

5th. To successfully compete with the farm flocks the village or city lot poultryman must keep high producing hens and sell at a higher price.

6th. Poultry "systems" requiring close confinement of the flock and a large amount of personal attention are out of place on a general farm. The poultry should be incidental to the main business of the farm.

7th. Farm and village lot poultrymen are serious competitors with the commercial poultrymen. The surplus from all these small flocks pours upon the market a continuous stream regardless of profit. The commercial poultryman devoting all his time to the business sends to the market a produce, the price of which is largely governed by supplies furnished by his competitors and to whom the business is only an incident.

8th. A better system of marketing eggs and poultry is needed; one which will encourage the production of a high-class product and insure expeditious and careful transportation to the consumer.

This circular is submitted to the farmers and poultrymen of the State as being conclusive only in so far as the particular flocks involved are concerned, and as an indication of the conditions surrounding the industry. We hope poultrymen and farmers will question these figures and give the Experiment Station the benefit of the results of any experiments or data that they may have bearing on the questions involved. The Station wishes to continue this investigation with a larger number of flocks cooperating and will for the present continue to supply blanks to those who wish to do careful, accurate, painstaking work.

ACKNOWLEDGEMENTS

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